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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,880	04/06/2006	Shunpei Yamazaki	740756-2949	5429
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EXAMINER				
TAYLOR, EARLE N				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/574,880

Applicant(s)

YAMAZAKI ET AL.

Examiner

EARL N. TAYLOR

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
4a) Of the above claim(s) 10-13 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-9 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 06 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date 4/6/2006 and 9/15/2006
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Inventor's Patent Application
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I, Claims 1-9 in the reply filed on 29 October 2008 is acknowledged. Claims 10-13 are withdrawn for being directed to a non-elected invention

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

This office acknowledges receipt of the following items from the applicant: Information Disclosure Statements (IDS) filed on 6 April 2006 and 15 September 2006. The references cited on the PTOL 1449 forms have been considered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent Claims 1-4 recite the limitation "at least containing a layer comprising a silicon nitride or a silicon nitride oxide layer and a silicon oxide layer". It is unclear as to what elements are required. Does the applicant mean (a silicon nitride) or (a silicon nitride oxide layer and a silicon oxide layer) **OR** (a silicon nitride and a silicon oxide layer) or (a silicon nitride oxide layer and a silicon oxide layer). Clarification is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Fujii et al. (U.S. Patent Application Publication 2005/0074963 A1)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As insofar as Claim 1 is definite, Fujii teaches in Fig. 18-19, a light-emitting device comprising: a light-emitting element (908) in which a light-emitting material (903) is sandwiched between a pair of electrodes (909 and 904); and a thin film transistor (6700) including, from a substrate side, a lamination of (par. 208 referencing TFTs formed by Embodiment Mode 1): a gate electrode (106) formed by fusing conductive nanoparticles (par. 43); a gate insulating layer (106) formed in contact with the gate electrode (106), at least containing a layer comprising a silicon nitride (par. 52); and a semiconductor layer (107); a pixel in which the light-emitting element and the thin film transistor are connected is provided (par. 208-212).

The language, term, or phrase "a gate electrode formed by fusing conductive nanoparticles", is directed towards the process of forming a gate electrode. It is well settled that "product by process" limitations in claims drawn to structure are directed to the product, *per se*, no matter how actually made. *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product *per se* which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise. The above case law further makes clear that

applicant has the burden of showing that the method language necessarily produces a structural difference.

As such, the language only requires a gate electrode, which does not distinguish the invention from Fujii, who teaches the structure as claimed.

Claim 1 recites "wherein a pixel in which the light-emitting element and the thin film transistor are connected is provided". The claim does not recite that the light-emitting device comprises a pixel. Therefore the recitation does not limit the structure of the claimed light-emitting device.

As insofar as Claim 2 is definite, Fujii teaches in Fig. 18-19, a light-emitting device comprising: a light-emitting element (908) in which a light-emitting material (903) is sandwiched between a pair of electrodes (909 and 904); and a thin film transistor (6700) including, from a substrate side, a lamination of (par. 208 referencing TFTs formed by Embodiment Mode 1): a gate electrode (106) formed by fusing conductive nanoparticles (par. 43); a gate insulating layer (106) formed in contact with the gate electrode (106), at least containing a layer comprising a silicon nitride (par. 52); and a semiconductor layer (107); wirings (115 and 116; par. 10 and 60) connected to a source and a drain and formed by fusing conductive nanoparticles; and a silicon nitride layer or silicon nitride oxide layer (118; par. 63) formed by being in contact with the wirings (115 and 116); a pixel in which the light-emitting element and the thin film transistor are connected is provided (par. 208-212).

The language, term, or phrase “a gate electrode formed by fusing conductive nanoparticles” and “wirings ... formed by fusing conductive nanoparticles”, is directed towards the process of forming a gate electrode. It is well settled that “product by process” limitations in claims drawn to structure are directed to the product, *per se*, no matter how actually made. *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product *per se* which must be determined in a “product by process” claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or otherwise. The above case law further makes clear that applicant has the burden of showing that the method language necessarily produces a structural difference.

As such, the language only requires a gate electrode and wirings, which does not distinguish the invention from Fujii, who teaches the structure as claimed.

Claim 2 recites “wherein a pixel in which the light-emitting element and the thin film transistor are connected is provided”. The claim does not recite that the light-emitting device comprises a pixel. Therefore the recitation does not limit the structure of the claimed light-emitting device.

As insofar as Claim 3 is definite, Fujii teaches in Fig. 18-19, a light-emitting device comprising: a light-emitting element (908) in which a light-emitting material (903) is sandwiched between a pair of electrodes (909 and 904); and a thin film transistor (6700) including, from a substrate side, a lamination of (par. 208 referencing TFTs formed by Embodiment Mode 1): a gate electrode (106) formed by fusing conductive nanoparticles (par. 43); a gate insulating layer (106) formed in contact with the gate electrode (106), at least containing a layer comprising a silicon nitride (par. 52); and a semiconductor layer (107); a driver circuit including a second thin film transistor (6701) formed by having the same layer structure as that of the first thin film transistor (6700) (par. 208 and 209); and a wiring (shown in Fig. 18A, 18B and 19A) extended from the driver circuit and connecting to the gate electrode (6700) of the first thin film transistor (6700); a pixel in which the light-emitting element and the thin film transistor are connected is provided (par. 208-212).

The language, term, or phrase “a gate electrode formed by fusing conductive nanoparticles”, is directed towards the process of forming a gate electrode. It is well settled that “product by process” limitations in claims drawn to structure are directed to the product, *per se*, no matter how actually made. *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product *per se* which must be determined in a “product by

process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise. The above case law further makes clear that applicant has the burden of showing that the method language necessarily produces a structural difference.

As such, the language only requires a gate electrode, which does not distinguish the invention from Fujii, who teaches the structure as claimed.

Claim 3 recites "wherein a pixel in which the light-emitting element and the thin film transistor are connected is provided". The claim does not recite that the light-emitting device comprises a pixel. Therefore the recitation does not limit the structure of the claimed light-emitting device.

As insofar as Claim 4 is definite, Fujii teaches in Fig. 18-19, a light-emitting device comprising: a light-emitting element (908) in which a light-emitting material (903) is sandwiched between a pair of electrodes (909 and 904); and a thin film transistor (6700) including, from a substrate side, a lamination of (par. 208 referencing TFTs formed by Embodiment Mode 1): a gate electrode (106) formed by fusing conductive nanoparticles (par. 43); a gate insulating layer (106) formed in contact with the gate electrode (106), at least containing a layer comprising a silicon nitride (par. 52); and a semiconductor layer (107); wirings (115 and 116; par. 10 and 60) connected to a source and a drain and formed by fusing conductive nanoparticles; and a silicon nitride layer or silicon nitride oxide layer (118; par. 63) formed by being in contact with the wirings (115

and 116); a driver circuit including a second thin film transistor (6701) formed by having the same layer structure as that of the first thin film transistor (6700) (par. 208 and 209); and a wiring (shown in Fig. 18A, 18B and 19A) extended from the driver circuit and connecting to the gate electrode (6700) of the first thin film transistor (6700); a pixel in which the light-emitting element and the thin film transistor are connected is provided (par. 208-212).

The language, term, or phrase "a gate electrode formed by fusing conductive nanoparticles" and "wirings ... formed by fusing conductive nanoparticles", is directed towards the process of forming a gate electrode. It is well settled that "product by process" limitations in claims drawn to structure are directed to the product, *per se*, no matter how actually made. *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product *per se* which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise. The above case law further makes clear that applicant has the burden of showing that the method language necessarily produces a structural difference.

As such, the language only requires a gate electrode and wirings, which does not distinguish the invention from Fujii, who teaches the structure as claimed.

Claim 4 recites "wherein a pixel in which the light-emitting element and the thin film transistor are connected is provided". The claim does not recite that the light-emitting device comprises a pixel. Therefore the recitation does not limit the structure of the claimed light-emitting device.

As insofar as Claim 5 is definite, Fujii further teaches wherein the conductive nanoparticles comprise silver (par. 15, 43, 87 and 110).

As insofar as Claim 6 is definite, Fujii further teaches wherein the semiconductor layer contains hydrogen and halogen and is a semi-amorphous semiconductor having a crystal structure (par. 53, 149 and 167).

As insofar as Claim 7 is definite, Fujii further teaches wherein the driver circuit is composed only of an n-channel type thin film transistor (par. 57; the TFT can be either P-type or N-type exclusively).

As insofar as Claim 8 is definite, Fujii further teaches wherein the thin film transistor includes the semiconductor layer containing hydrogen and halogen and which is a semiconductor having a crystal structure (par. 53, 149 and 167), thus because Fujii teaches all of the claimed structural elements, the thin film transistor is capable of being operated in electric field effect mobility of from $1 \text{ cm}^2/\text{V} \cdot \text{sec}$ to $15 \text{ cm}^2/\text{V} \cdot \text{sec}$. See also paragraph 150 wherein the TFT mobility is $1 \text{ cm}^2/\text{V} \cdot \text{sec}$ to $10 \text{ cm}^2/\text{V} \cdot \text{sec}$.

As insofar as Claim 9 is definite, Fujii further teaches wherein the light-emitting device is a display screen (par. 226; Fig. 16-16C).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Li et al. (U.S. Patent Application Publication 2006/0073667 A1) teaches TFTs comprising silver-containing nanoparticles (Fig. 1-4; par. 37-40).

Jacobson et al. (U.S. Patent 6,294,401 B1) teaches in Fig. 1, a thin film transistor (TFT) having a gate, a source electrode and a drain electrode comprising silver nanoparticles that are treated to cause fusion, annealing or melting of the particles to form the conductive layer (Col. 6, Lines 11-35).

Telephone / Fax Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Earl N. Taylor whose telephone number is (571) 272-8894. The examiner can normally be reached on Monday-Friday from 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke can be reached on (571) 272-1657. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Art Unit: 2818

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Examiner: Earl N. Taylor

/DAVID VU/

Primary Examiner, Art Unit 2818